OIPE
FEB. 10 2005
PATENT & TRADEMARK OFFICE

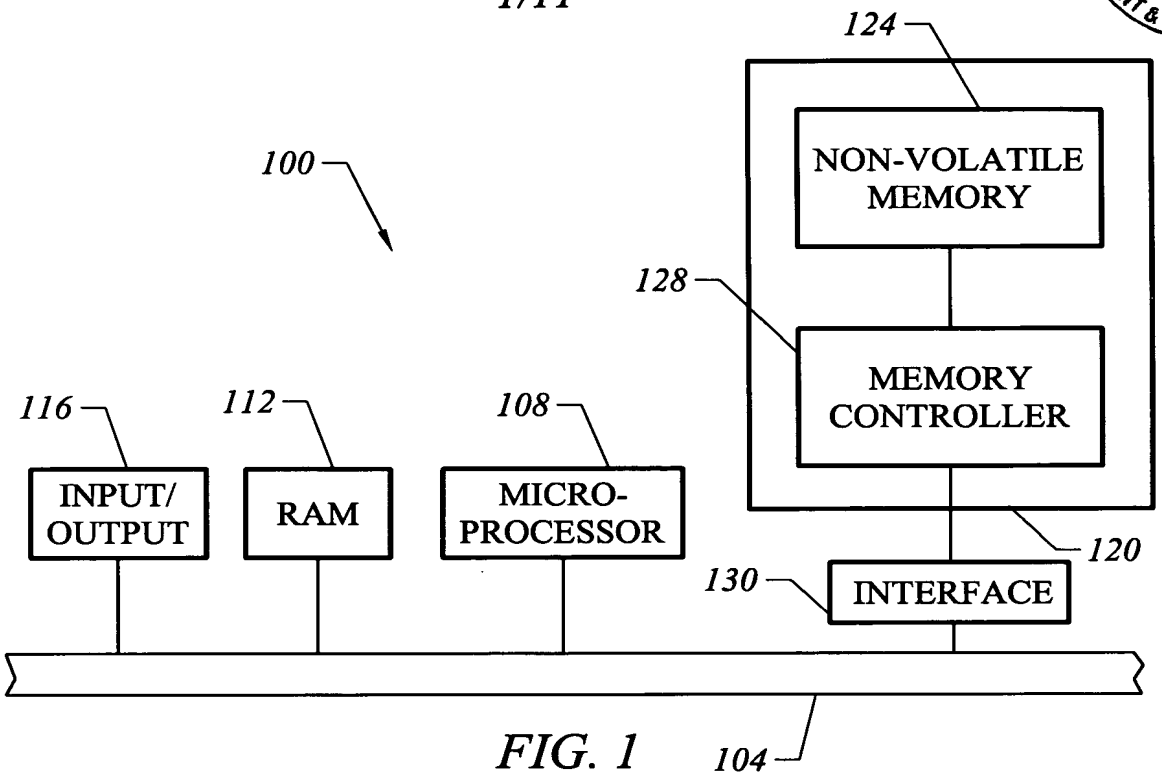


FIG. 1

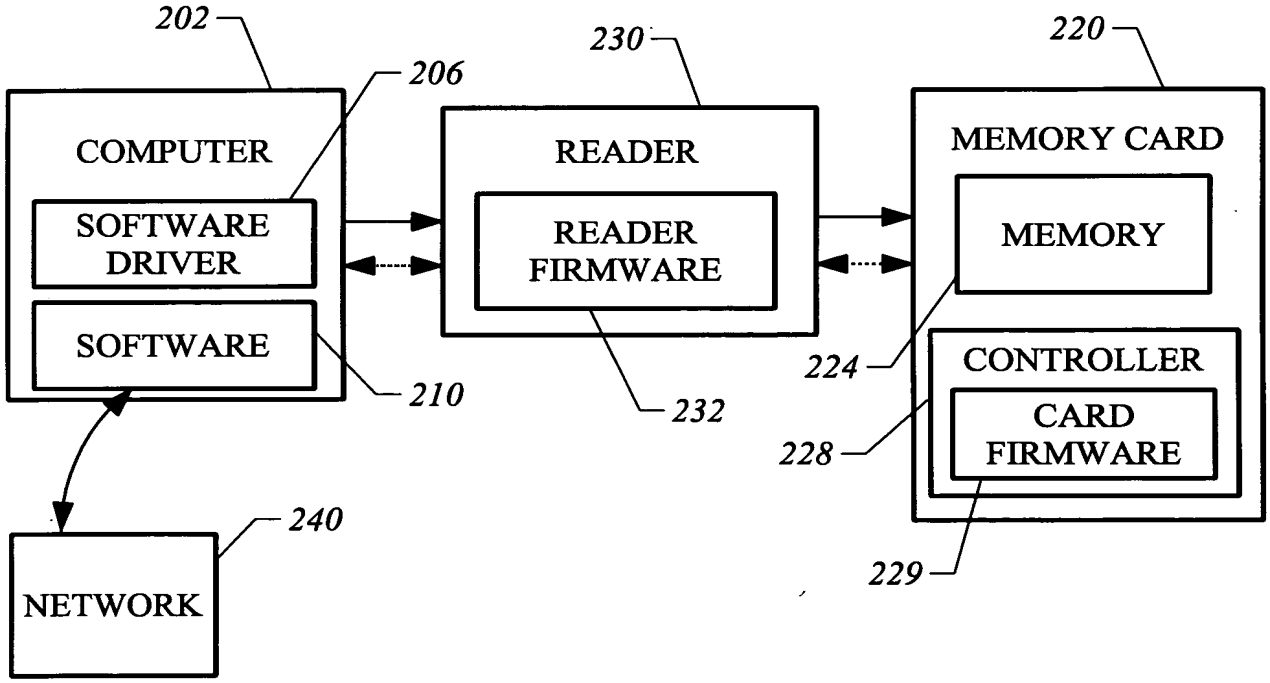


FIG. 2

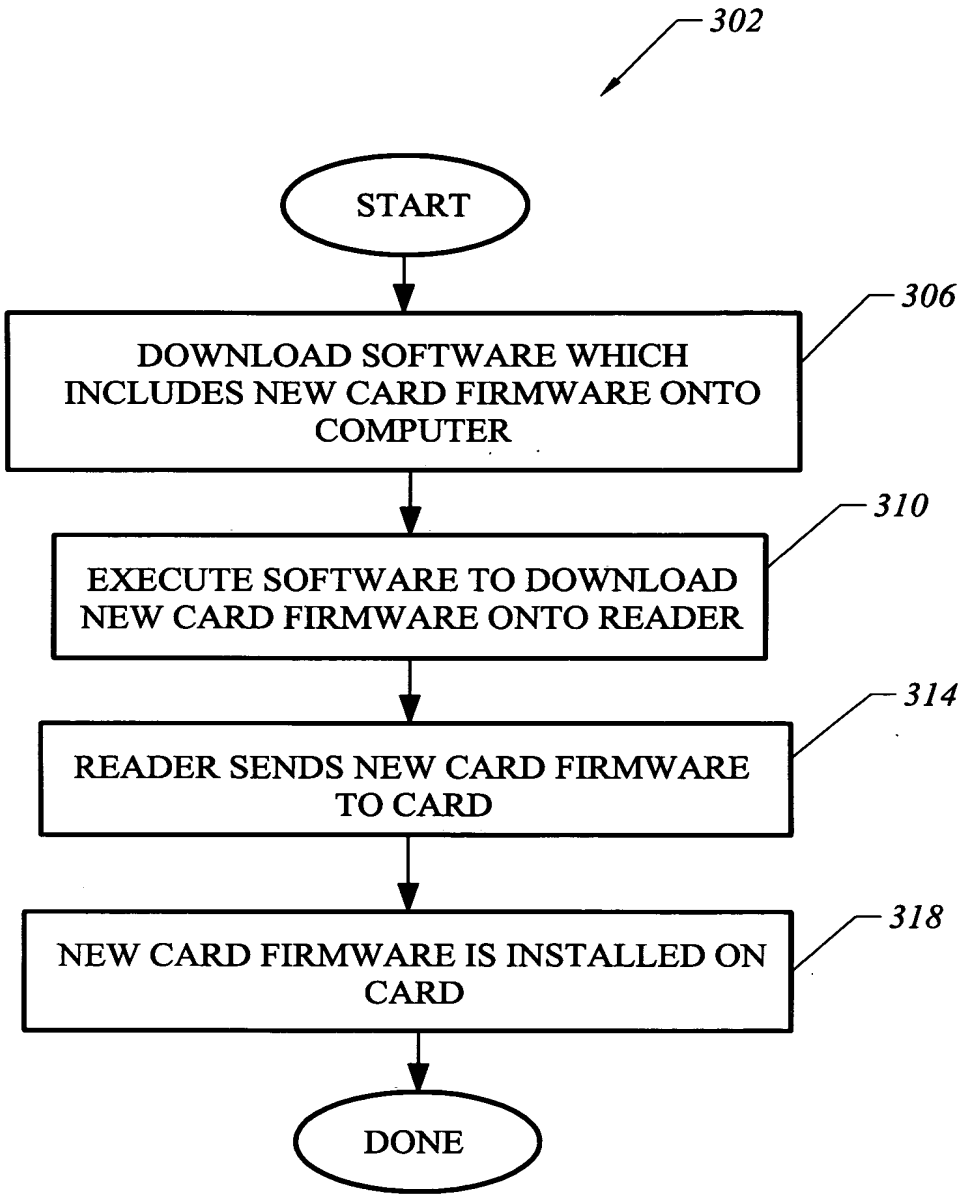

302
START
306
DOWNLOAD SOFTWARE WHICH INCLUDES NEW CARD FIRMWARE ONTO COMPUTER
310
EXECUTE SOFTWARE TO DOWNLOAD NEW CARD FIRMWARE ONTO READER
314
READER SENDS NEW CARD FIRMWARE TO CARD
318
NEW CARD FIRMWARE IS INSTALLED ON CARD
DONE

FIG. 3

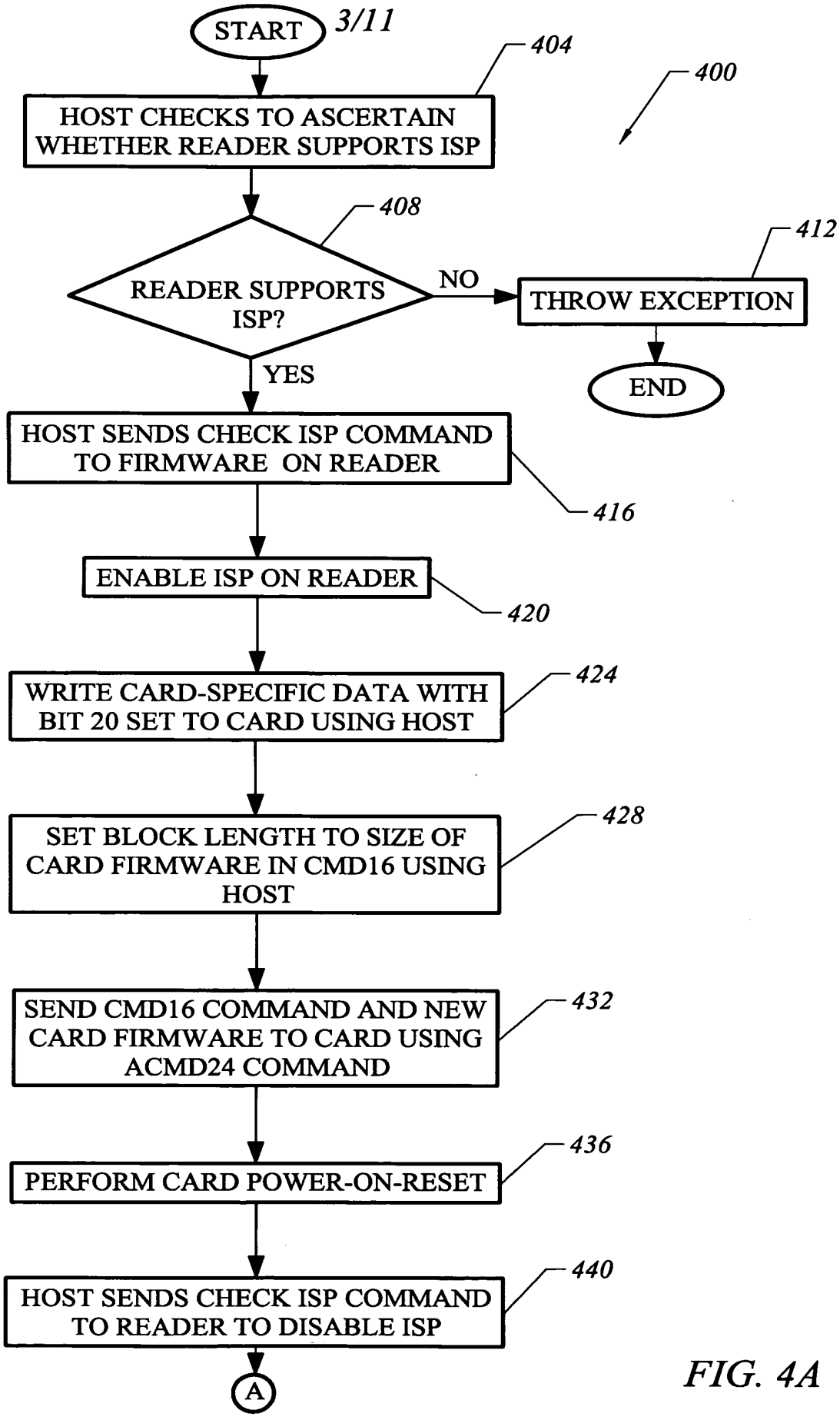

START
404
400
HOST CHECKS TO ASCERTAIN WHETHER READER SUPPORTS ISP
408
412
READER SUPPORTS ISP?
NO
THROW EXCEPTION
END
YES
HOST SENDS CHECK ISP COMMAND TO FIRMWARE ON READER
416
ENABLE ISP ON READER
420
WRITE CARD-SPECIFIC DATA WITH BIT 20 SET TO CARD USING HOST
424
SET BLOCK LENGTH TO SIZE OF CARD FIRMWARE IN CMD16 USING HOST
428
SEND CMD16 COMMAND AND NEW CARD FIRMWARE TO CARD USING ACMD24 COMMAND
432
PERFORM CARD POWER-ON-RESET
436
HOST SENDS CHECK ISP COMMAND TO READER TO DISABLE ISP
440
A

FIG. 4A

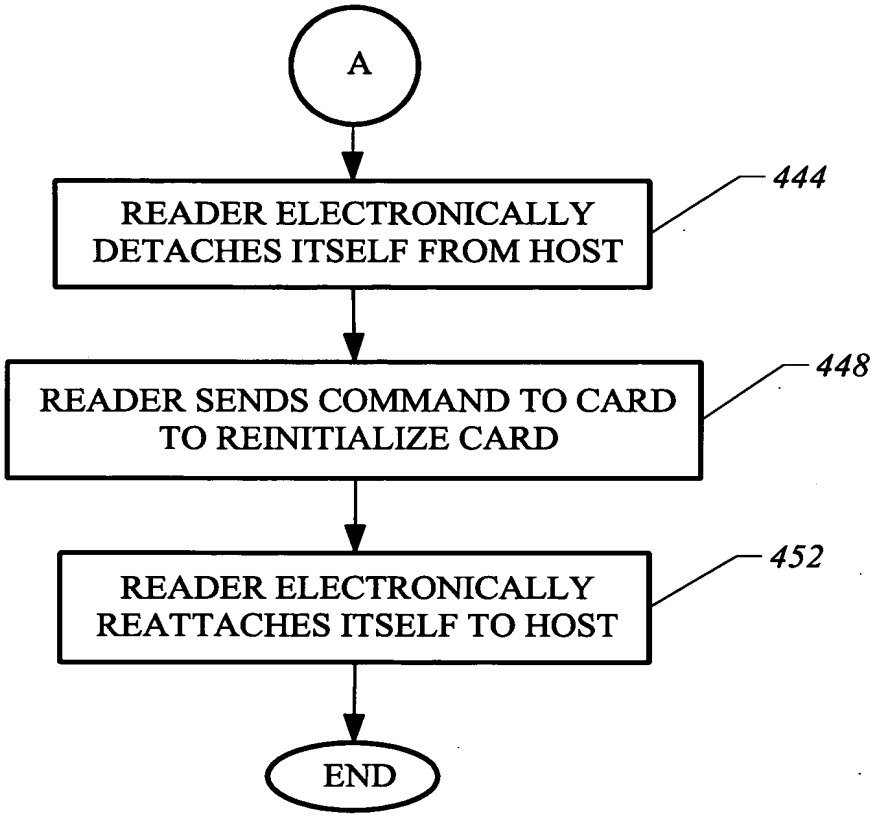

A
READER ELECTRONICALLY DETACHES ITSELF FROM HOST
444
READER SENDS COMMAND TO CARD TO REINITIALIZE CARD
448
READER ELECTRONICALLY REATTACHES ITSELF TO HOST
452
END

FIG. 4B

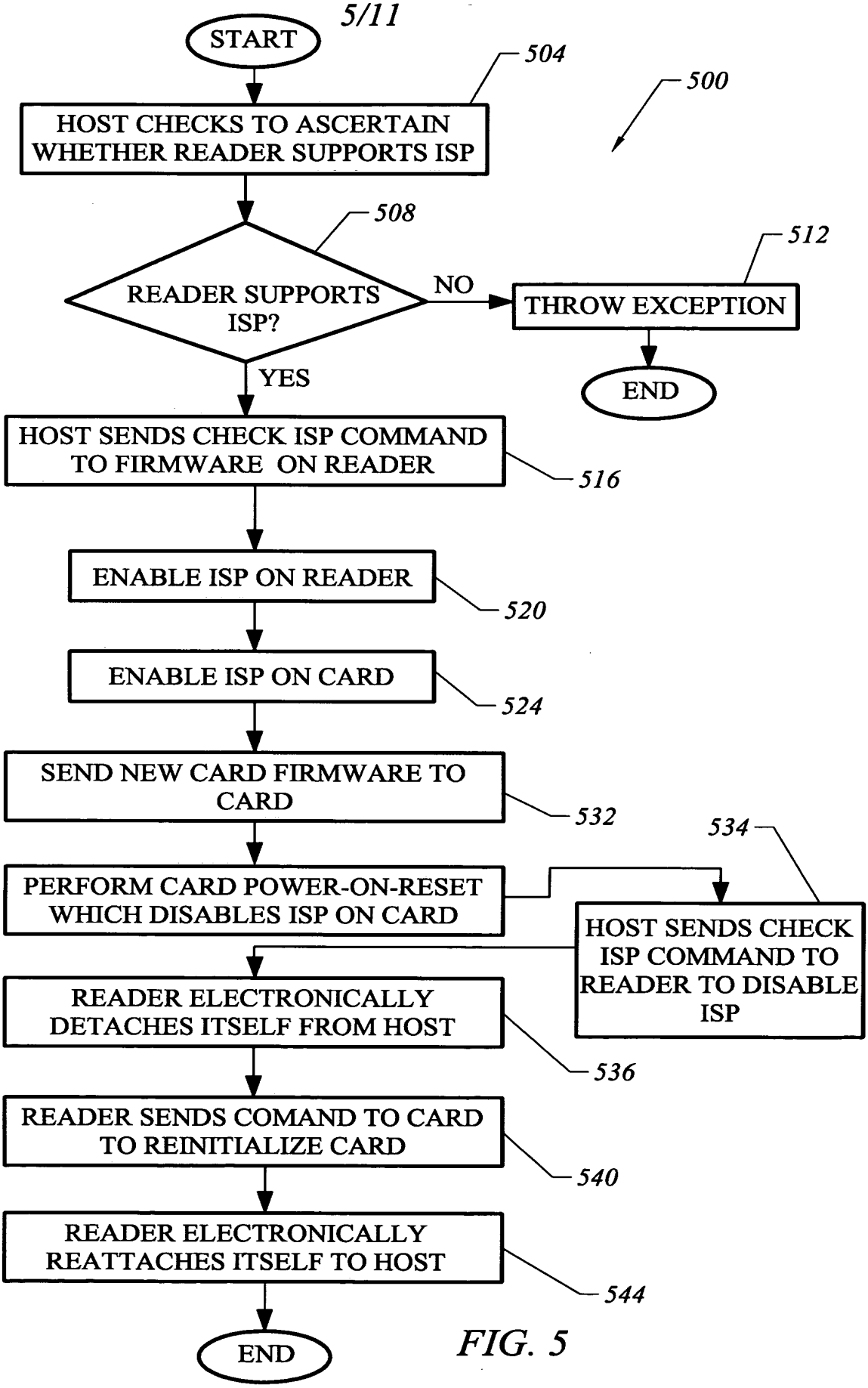

START
504
500
HOST CHECKS TO ASCERTAIN WHETHER READER SUPPORTS ISP
508
512
READER SUPPORTS ISP?
NO
THROW EXCEPTION
END
YES
HOST SENDS CHECK ISP COMMAND TO FIRMWARE ON READER
516
ENABLE ISP ON READER
520
ENABLE ISP ON CARD
524
SEND NEW CARD FIRMWARE TO CARD
532
534
PERFORM CARD POWER-ON-RESET WHICH DISABLES ISP ON CARD
HOST SENDS CHECK ISP COMMAND TO READER TO DISABLE ISP
READER ELECTRONICALLY DETACHES ITSELF FROM HOST
536
READER SENDS COMAND TO CARD TO REINITIALIZE CARD
540
READER ELECTRONICALLY REATTACHES ITSELF TO HOST
544
END

FIG. 5

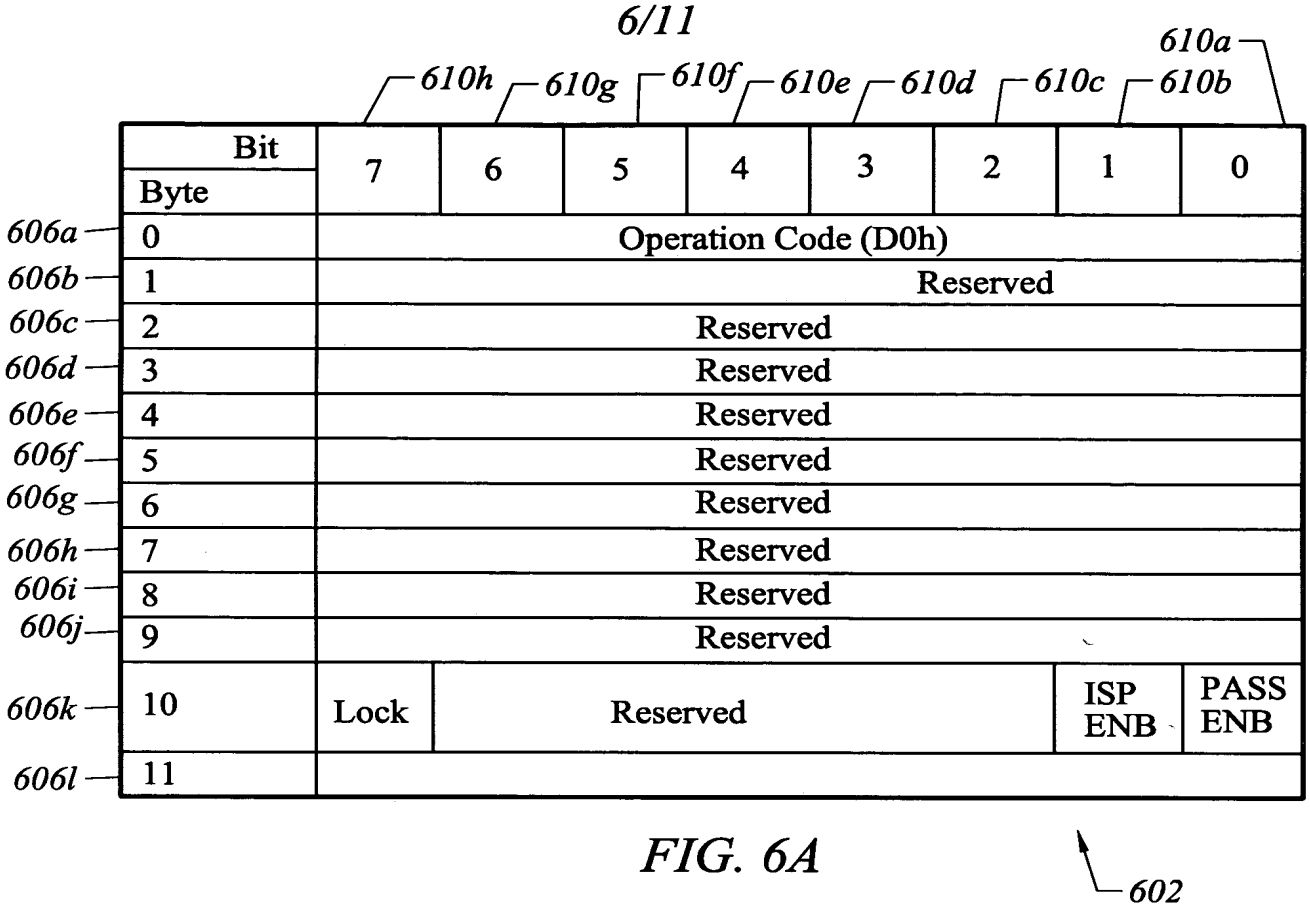

610h
610g
610f
610e
610d
610c
610b
610a
Bit
Byte
7
6
5
4
3
2
1
0
606a
0
Operation Code (D0h)
606b
1
Reserved
606c
2
Reserved
606d
3
Reserved
606e
4
Reserved
606f
5
Reserved
606g
6
Reserved
606h
7
Reserved
606i
8
Reserved
606j
9
Reserved
606k
10
Lock
Reserved
ISP ENB
PASS ENB
606l
11
602

FIG. 6A

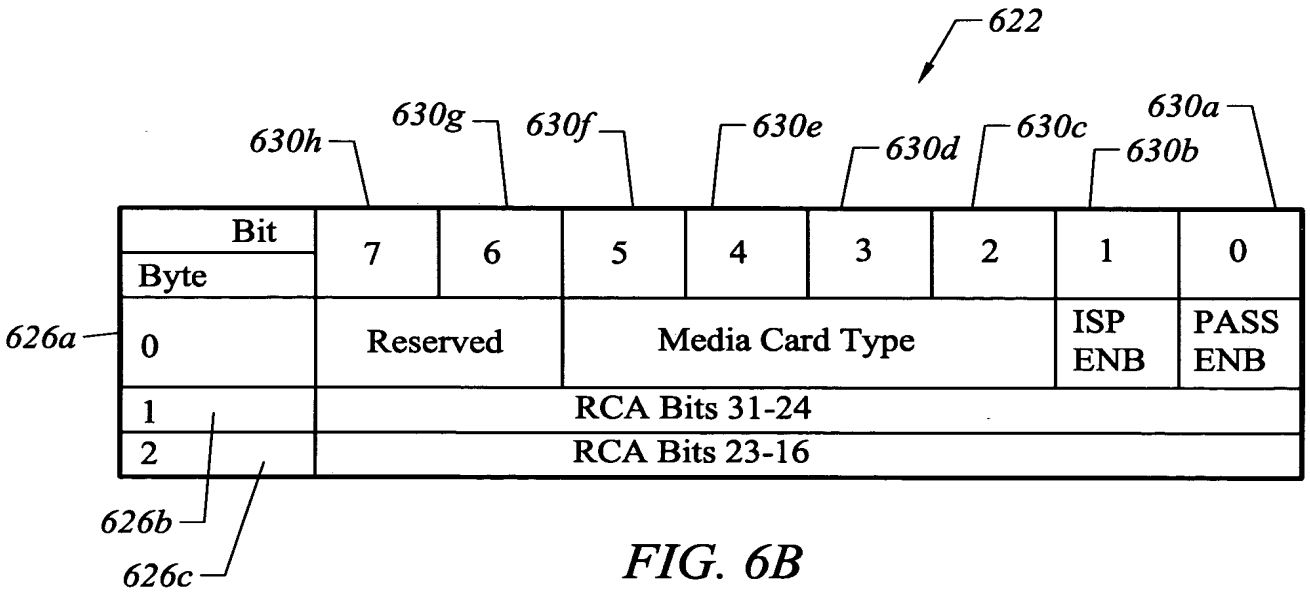

622
630h
630g
630f
630e
630d
630c
630b
630a
Bit
Byte
7
6
5
4
3
2
1
0
626a
0
Reserved
Media Card Type
ISP ENB
PASS ENB
1
RCA Bits 31-24
2
RCA Bits 23-16
626b
626c

FIG. 6B

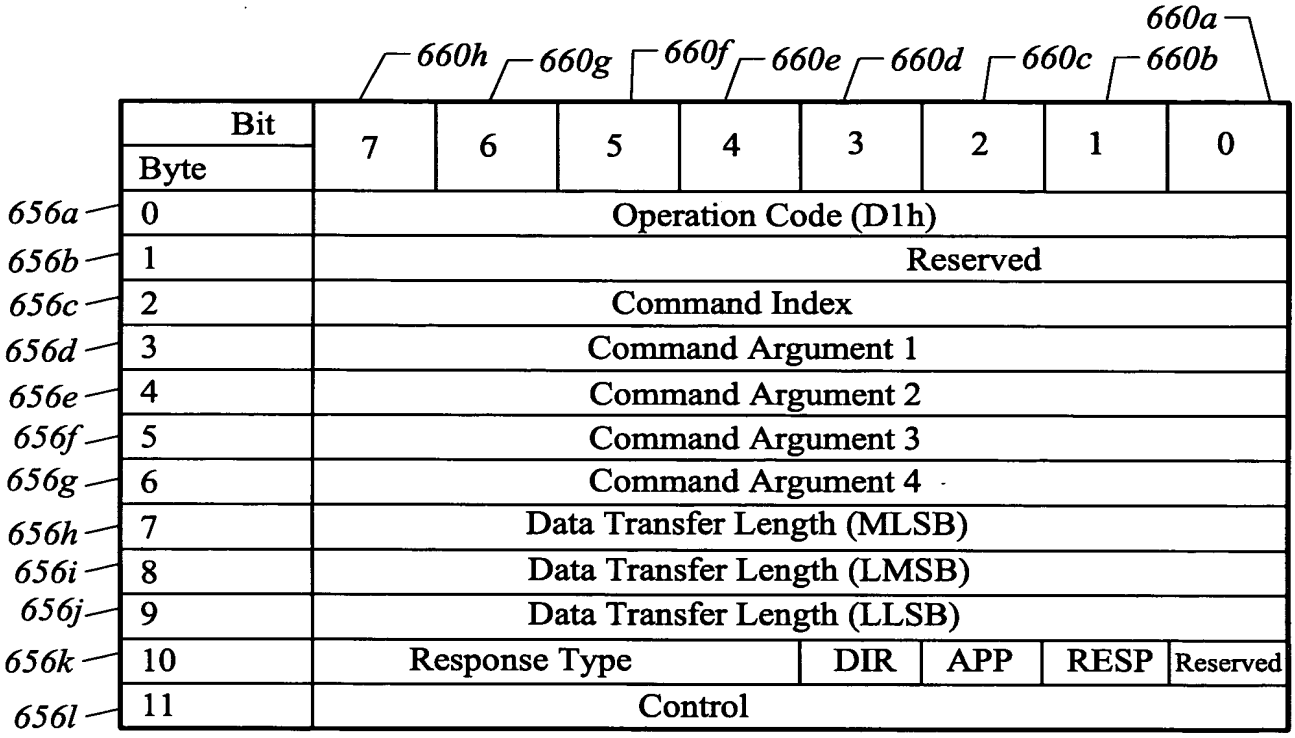

660a
660h
660g
660f
660e
660d
660c
660b
Bit
Byte
7
6
5
4
3
2
1
0
656a
0
Operation Code (D1h)
656b
1
Reserved
656c
2
Command Index
656d
3
Command Argument 1
656e
4
Command Argument 2
656f
5
Command Argument 3
656g
6
Command Argument 4
656h
7
Data Transfer Length (MLSB)
656i
8
Data Transfer Length (LMSB)
656j
9
Data Transfer Length (LLSB)
656k
10
Response Type
DIR
APP
RESP
Reserved
656l
11
Control
652

FIG. 6C

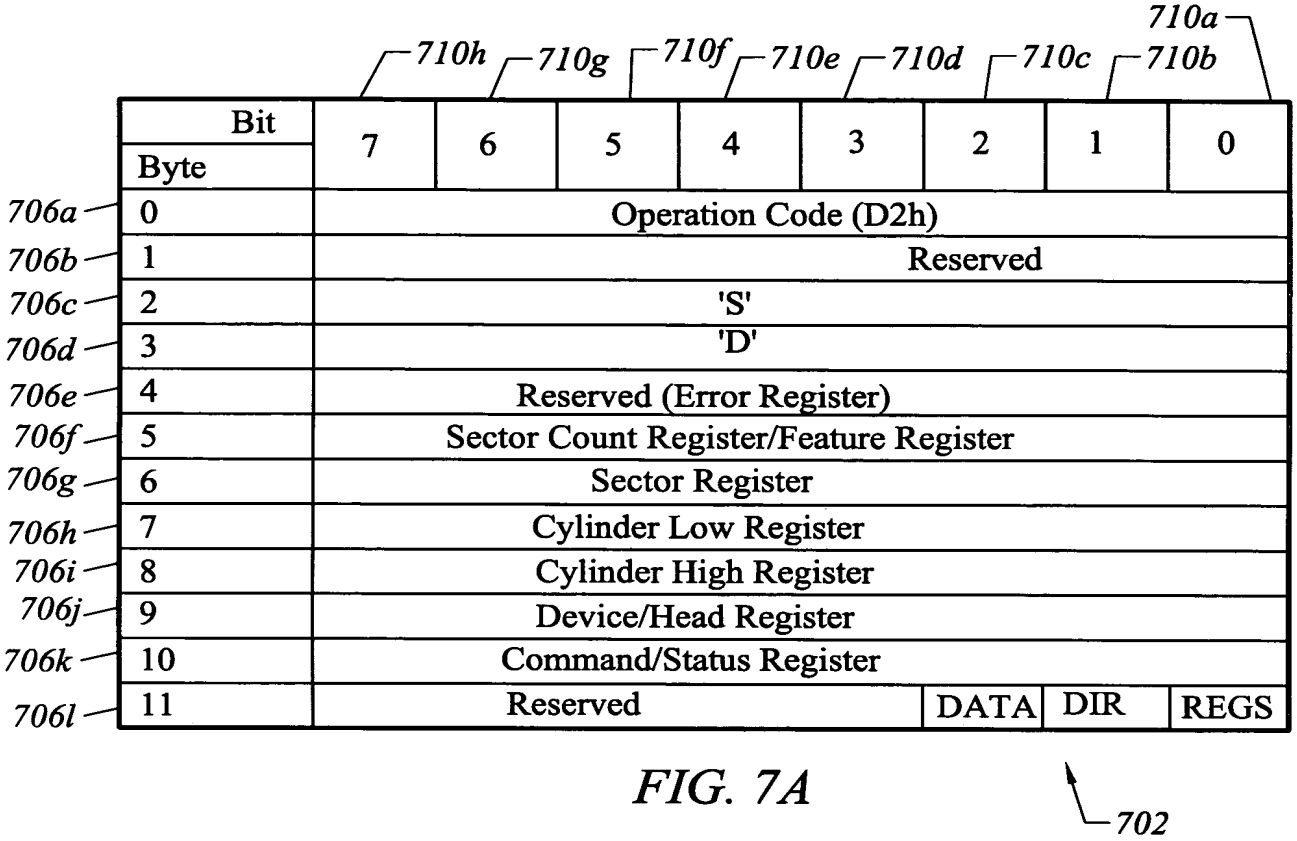

710a
710h
710g
710f
710e
710d
710c
710b
Bit
Byte
7
6
5
4
3
2
1
0
706a
0
Operation Code (D2h)
706b
1
Reserved
706c
2
'S'
706d
3
'D'
706e
4
Reserved (Error Register)
706f
5
Sector Count Register/Feature Register
706g
6
Sector Register
706h
7
Cylinder Low Register
706i
8
Cylinder High Register
706j
9
Device/Head Register
706k
10
Command/Status Register
706l
11
Reserved
DATA
DIR
REGS
702

FIG. 7A

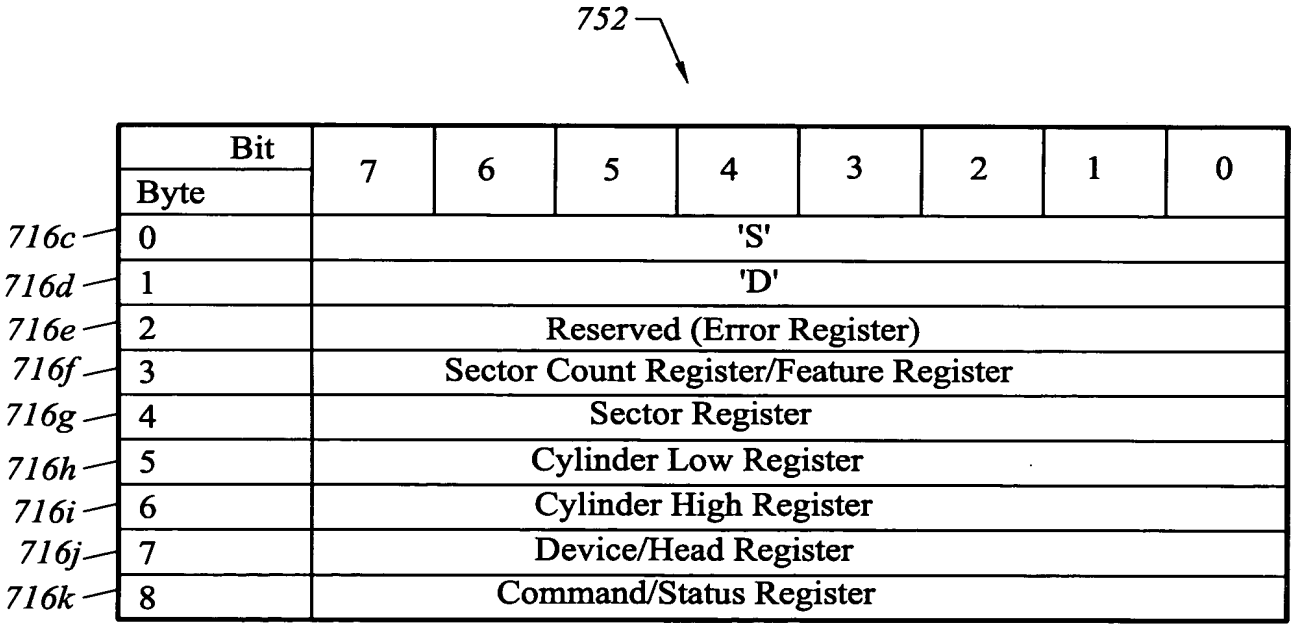

752
Bit
Byte
7
6
5
4
3
2
1
0
716c
0
'S'
716d
1
'D'
716e
2
Reserved (Error Register)
716f
3
Sector Count Register/Feature Register
716g
4
Sector Register
716h
5
Cylinder Low Register
716i
6
Cylinder High Register
716j
7
Device/Head Register
716k
8
Command/Status Register

FIG. 7B

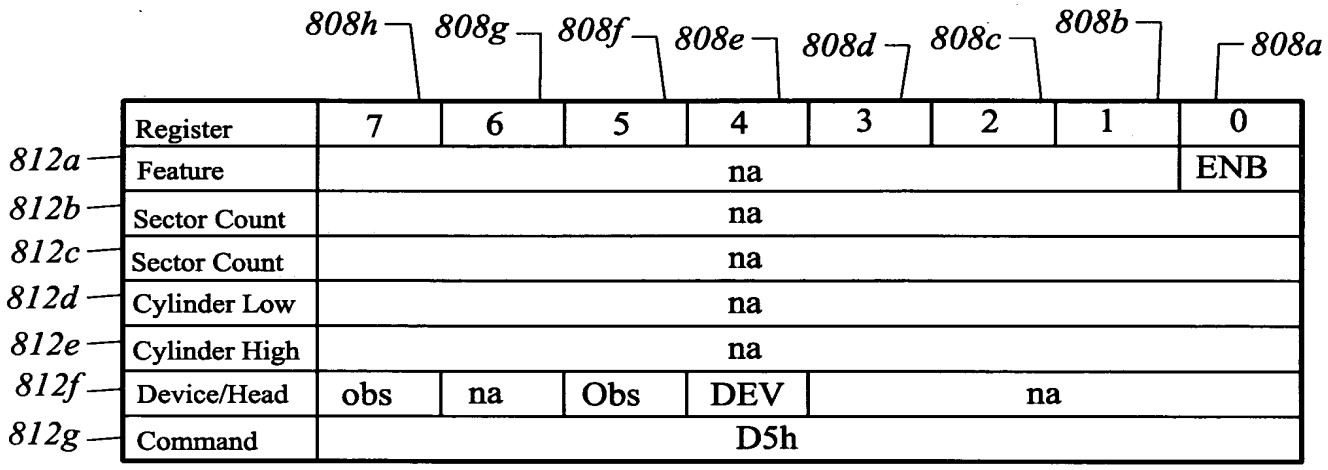
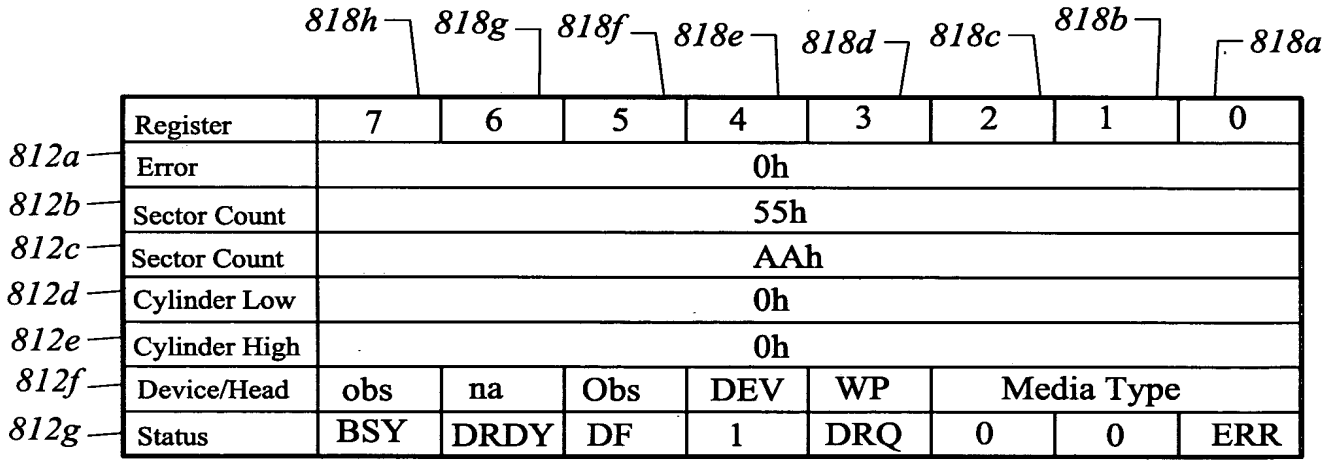


FIG. 8A

804



814

FIG. 8B

	Register	7 (828h)	6 (828g)	5 (828f)	4 (828e)	3 (828d)	2 (828c)	1 (828b)	0 (828a)
832a	Error	0	0	0	0	0	0	ABRT	0
832b	Sector Count	na							
832c	Sector Count	na							
832d	Cylinder Low	na							
832e	Cylinder High	na							
832f	Device/Head	obs	na	Obs	DEV	na			
832g	Status	BSY	DRDY	DF	na	DRQ	na	na	ERR

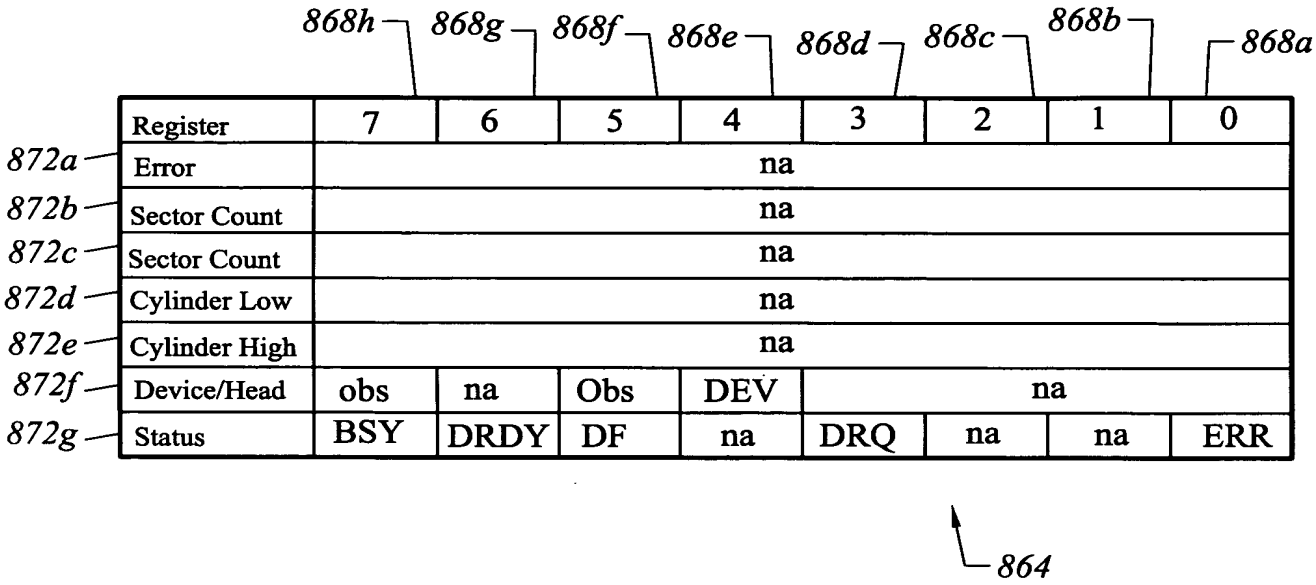
FIG. 8C

824

	Register	7 (848h)	6 (848g)	5 (848f)	4 (848e)	3 (848d)	2 (848c)	1 (848b)	0 (848a)
852a	Feature	0h							DIR
852b	Sector Count	Number of sectors							
852c	Sector Count	Starting LBA of Firmware (LSB)							
852d	Cylinder Low	Starting LBA of Firmware (Middle Byte)							
852e	Cylinder High	Starting LBA of firmware (MSB)							
852f	Device/Head	obs	na	Obs	DEV	0h			
852g	Command	D6h							

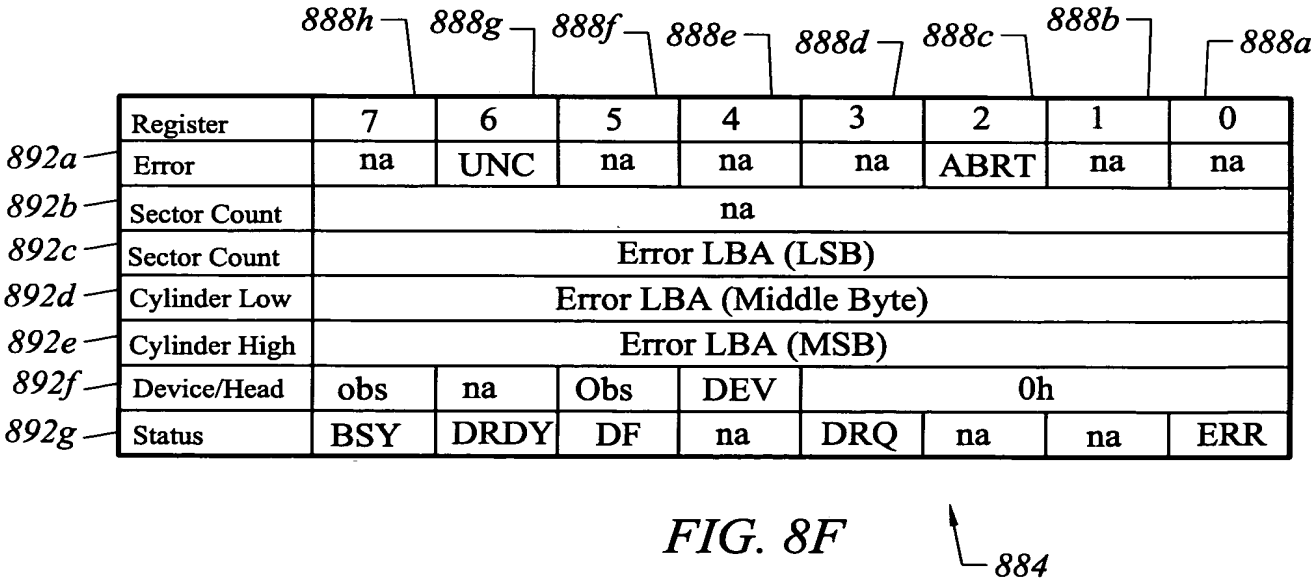
844

FIG. 8D



	Register	7 (868h)	6 (868g)	5 (868f)	4 (868e)	3 (868d)	2 (868c)	1 (868b)	0 (868a)
872a	Error	na							
872b	Sector Count	na							
872c	Sector Count	na							
872d	Cylinder Low	na							
872e	Cylinder High	na							
872f	Device/Head	obs	na	Obs	DEV	na			
872g	Status	BSY	DRDY	DF	na	DRQ	na	na	ERR

FIG. 8E



	Register	7 (888h)	6 (888g)	5 (888f)	4 (888e)	3 (888d)	2 (888c)	1 (888b)	0 (888a)
892a	Error	na	UNC	na	na	na	ABRT	na	na
892b	Sector Count	na							
892c	Sector Count	Error LBA (LSB)							
892d	Cylinder Low	Error LBA (Middle Byte)							
892e	Cylinder High	Error LBA (MSB)							
892f	Device/Head	obs	na	Obs	DEV	0h			
892g	Status	BSY	DRDY	DF	na	DRQ	na	na	ERR

FIG. 8F